

## Contents

1	Description of the problem.....	1
2	IDL Example.....	1
3	Python Example .....	2

## 1 Description of the problem

On rare occasions, a granule (file) of ACOS GOSAT/TANSO-FTS Level 2 Full Physics Standard Product, ACOS\_L2S, may have all data fields of **Null-length**, because the granule is not populated due to lack of successfully retrieved soundings . Users can still open this HDF5 file, list contents and see all fields names, with no problems or alerting signs. However, the field names will not have a single byte of data behind them, i.e. the data objects will be of Null length.

The impact is that some HDF5 application interfaces (API), like IDL, will report an error, and will halt the program execution upon attempt to read such a Null-length field into allocated memory. IDL will issue an error message:

```
% Array dimensions must be greater than 0
```

and will halt the program execution, with an open API hanging in the air.

To avoid these interruptions, it is strongly recommended to apply a simple HDF5 query, before attempting to read data into memory. The query is to be placed after the API to the file and the data field are opened, and before attempting to read the data. Since this query is provided in the HDF5 API library, it would be a good programming practice to use it anyway in general, not only for ACOS data. In IDL, the name of this query function is H5D\_GET\_STORAGE\_SIZE, and an example usage is shown below.

## 2 IDL Example

```
File_name ="acos_L2s_100424_41_Production_v100100_L2s2800_r01_PolB_110220040640.h5"
```

```
f_id=H5F_OPEN(File_name)
```

```
d_id=H5D_OPEN(f_id,'/RetrievalResults/xco2')
```

```
sz=H5D_GET_STORAGE_SIZE(d_id) ;check the size of "xco2" data field
```

```
IF sz EQ 0 THEN BEGIN
```

```
;If size has been detected as 0, the execution detours through  
;here, and the access (the API) to the file will close  
;normally:
```

```
H5D_CLOSE,d_id  
H5F_CLOSE,f_id
```

```
;Now you can skip to the next file, or gracefully  
;exit the program, with a warning message if you wish.
```

```
ENDIF
```

### 3 Python Example

The following is a simple excerpt to be used within Python scripts

```
f_id=h5py.h5f.open(acosfile)  
d_id=h5py.h5d.open(f_id,'/RetrievalResults/xco2')  
sz=d_id.get_storage_size() #check the size of "xco2" data field  
  
d_id._close()  
f_id.close()
```